

OPERATING EXPERIENCE WEEKLY SUMMARY

Office of Nuclear and Facility Safety

February 27 through March 5, 1998

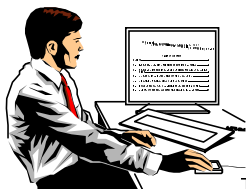
Summary 98-09

Operating Experience Weekly Summary 98-09

February 27 through March 5, 1998

Table of Contents

EVENTS	1
1. FINAL BARRIER AVERTS POTENTIAL EXPOSURE TO HIGH RADIATION FIELD	1
2. LITHIUM METAL STORED IN NITROGEN ATMOSPHERE.....	2
3. RADIOLOGICAL WORK PERMIT VIOLATION.....	4
4. FURNACE DOOR FALLS DURING DECOMMISSIONING ACTIVITIES	6
5. OPERATOR ERROR RESULTS IN A NEAR-MISS	8
FOLLOWUP ACTIVITY	11
1. UPDATE ON EXCESSIVE HYDROGEN LEVELS AT ROCKY FLATS.....	11



Visit Our Web Site

The Weekly Summary is available, with word search capability, via the Internet at http://tis.eh.doe.gov/web/oeaf/oe_weekly/oe_weekly.html. If you have difficulty accessing the Weekly Summary at this URL, please contact the ES&H Information Center, 1-800-473-4375 for assistance. If you have additional pertinent information or identify inaccurate statements in the summary, please bring this to the attention of Jim Snell, 301-903-4094, or Internet address jim.snell@hq.doe.gov, so we may issue a correction.

EVENTS

1. FINAL BARRIER AVERTS POTENTIAL EXPOSURE TO HIGH RADIATION FIELD

On February 25, 1998, at the Oak Ridge National Laboratory, a construction crew foreman learned at the last minute that his planned removal of cell plugs would have resulted in personnel being exposed to radiation fields estimated at 25 to 30 rem/hr. The foreman was conducting final job preparation to remove the shield plugs from two cells in a building at the Waste Management and Remedial Action Facility, so he could conduct preliminary characterization of the cells and take radiation smears from inside them. The foreman met with the building operations supervisor to inform him of the work, but the supervisor (who was the final administrative barrier) told him not to initiate any work because the two cells were active and contained material with significant radioactivity. The construction crew foreman ceased work preparation and left the facility. The construction crew could have been exposed to high radiation fields if the operations supervisor had not been contacted. ORPS Report ORO--ORNL-X10WSTEMRA-1998-0003)

The construction crew was characterizing cells in the building by lifting the plugs and taking gamma dose readings and radiation smears. The construction crew did not know these two cells contained tanks with cesium-137 solutions. Inside the cells are hot spots reading hundreds of rem. Signs posted above the cell access plugs required contacting radiation protection personnel before entry. The construction work crew had initiated a draft project hazard analysis document and was in the process of obtaining final sign-off when this notification was obtained. There was also a draft radiation work permit to allow characterization of the radiation hazards associated with the job.

The construction crew foreman and the engineering planning staff stated that it was their normal practice to contact the building operations supervisor just before initiating any work. However, this practice was the last remaining barrier before initiating work that could have had serious safety consequences. The building operations supervisor contacted his section head who raised this issue to the laboratory shift superintendent and the DOE facility representative. The DOE ORPS reporting manager and the facility representative determined this to be a significant near-miss occurrence.

NFS reported a similar event in Weekly Summary 92-26 concerning two shielded access doors for a control cell that contained highly radioactive waste that were open and could have resulted in significant personnel radiation exposure at the Windscale Vitrification Plant in England. Liquid wastes from reprocessing operations are stored at the plant in large stainless steel tanks pending conversion to solid waste. After conversion, operators perform final checks of the waste containers in the control cell before transferring them to a storage facility. During this incident an operator discovered both shielded access doors open while a radioactive container was in the cell. Investigators determined the cause was the failure of engineered and administrative barriers designed to protect personnel near the control cell from high radiation. The causal factors included: (1) no explicit instructions for checking that the shield doors were closed before control cell operation; (2) no adequate control of keys for operating the doors; (3) a software coding error allowed the doors to be open; and (4) other interlocks were ineffective or defeated.

This event underscores the importance of involving facility managers and building supervisors early in the work-planning process. Contacting the building operations supervisor could have allowed identification of operational issues, problems, and work restrictions well before planners prepared project hazard analysis documents and appropriate permits. The cell plug provided a physical barrier against the high radiation fields, but its removal relied on an administrative barrier (the building operations supervisor's approval). If the construction crew foreman had not contacted the supervisor or had contacted someone else with limited knowledge of the existing building condition, workers could have been overexposed.

The *Hazard and Barrier Analysis Guide*, developed by OEAF, discusses barriers that control job-associated hazards, such as physical barriers, procedural or administrative barriers, or human action. The reliability of a barrier is determined by its ability to resist failure. Barriers can be imposed in series to provide defense-in-depth and to increase the margin of safety. The guide includes a hazard-barrier matrix that shows that a physical barrier is the most effective barrier against exposure to ionizing radiation, while exclusion (administrative barrier) is the least effective. The guide provides a detailed analysis for selecting optimum barriers.

A copy of *The Hazard and Barrier Analysis Guide* is available from Jim Snell, (301) 903-4094. A copy may also be obtained by contacting the ES&H Information Center, (800) 473-4375, or by writing to U.S. Department of Energy, ES&H Information Center, EH-72, 19901 Germantown Road, Germantown, MD 20874.

KEYWORDS: barrier, radiation, radiation protection, work planning

FUNCTIONAL AREAS: Radiation Protection, Work Planning

2. LITHIUM METAL STORED IN NITROGEN ATMOSPHERE

On February 26, 1998, at the Idaho National Engineering and Environmental Laboratory, facility chemists found five sealed containers of lithium metal stored inside a nitrogen glove box instead of an adjacent argon glove box. The chemists were performing work unrelated to the lithium when they discovered the improper storage. Lithium reacts with nitrogen and can result in highly exothermic reactions when exposed to water or oxygen. Chemists immediately transferred the containers of lithium to the argon glove box and conducted an evaluation of potential hazards resulting from the incorrect storage. They determined that none of the containers held more than 100 grams of lithium and the seals on all five containers were intact. There was no environmental release, and no safety or health consequences resulted from this occurrence. (ORPS Report ID--LITC-ERATOWNFAC-1998-0001)

Investigators determined that facility chemists filled the containers with lithium, inerted them with argon, and sealed them approximately 1 year ago. The chemists determined that the worst case scenario would have been if the containers had leaked and the nitrogen reacted with the lithium to form lithium azide (LiN_3). Lithium azide can react explosively if heated and mechanically agitated. The chemists determined that lithium azide is stable at room temperature and that there were no heat sources in the glovebox. Investigators are trying to determine how the canisters came to be stored for nearly a year in the wrong location.

NFS has reported similar events in the Weekly Summary involving improper handling and storage of pyrophoric materials. Following are some examples.

- Weekly Summary 97-04 reported that Special Materials Organization personnel at the Oak Ridge Y-12 Site discovered two containers in which lithium metal was not submerged in mineral oil or inerted. Operators repackaged the metal in mineral oil and verified that the remainder of the inventory was properly stored. (ORPS Report ORO--LMES-Y12SITE-1997-0003)
- Weekly Summary 96-23 reported that a building manager at the Rocky Flats Environmental Technology Site discovered that metallic potassium stored in a petroleum base was in an unsafe condition. Some of the oil evaporated, exposing 3/4 to 1 inch of potassium to air. The potassium metal oxidized and created a peroxide that was shock-sensitive. An ordnance disposal team removed and disposed of the material. (ORPS Report RFO--KHLL-779OPS-1996-0045)
- Weekly Summary 95-24 and 92-36 reported events involving fires caused by a pyrophoric reaction of lithium and water at the Lawrence Berkeley Laboratory. (ORPS Report SAN--LBL-EED-1995-0001, SAN--LBL-EHS-1992-0012)

These events underscore the importance of safe chemical handling and storage practices. Lithium is one of a number of pyrophoric metals used at DOE facilities. Lithium metal requires special handling because, when it reacts with the nitrogen and water present in air, sufficient heat is generated to cause auto-ignition, and it will burn at temperatures in excess of 1,000 degrees centigrade. Once ignited, lithium either burns itself out or is extinguished only by the very careful application of a smothering powder. Lithium should be stored in argon or helium atmospheres. When stored on work benches, it should be placed in kerosene or in a closed container of mineral oil. Managers of facilities that store lithium metal should refer to the following documents for guidance on the special requirements for safe lithium handling and storage.

- DOE HDBK-1081-94, *Primer on Spontaneous Heating and Pyrophoricity*, contains valuable information on pyrophoric hazards. The section on lithium storage and handling warns that, because lithium reacts with water, it requires special precautions to prevent contact with moisture. Sprinkler protection is undesirable, and combustible materials should not be stored in the same area with lithium.
- DOE/EH-0396P, *Chemical Safety Vulnerability Working Group Report*, and DOE/EH-0398P, *Chemical Safety Vulnerability Management Response Plan*, address the development and implementation of management systems and other administrative controls that can significantly reduce overall hazardous chemical inventories. These documents are available to DOE and DOE contractors from the Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831, (615) 576-8401. These documents are available to the public from the Department of Commerce, Technology Administration, National Technical Information Service, Springfield, VA 22161, (703) 487-4650.
- National Research Council Publication ISBN 0-309-05229-7, *Prudent Practices in the Laboratory: Handling and Disposal of Chemicals*, 1995, provides guidance and recommendations regarding the safe handling and storage of chemicals, primarily in laboratory settings. However, the information can be adapted to other settings and situations. Information on how order this book can be obtained from the National Academy Press, 2101 Constitution Avenue, N.W., Washington, DC 20418. This book can also be ordered from most larger book stores.

- OSHA Regulation 29 CFR 1910.1450, *Occupational Exposure to Hazardous Chemicals in Laboratories*, includes basic rules and procedures as well as training requirements and other information regarding safe use and storage of chemicals in the workplace.
- NFPA, *Fire Protection Handbook*, chapter 6-26, "Combustible Metal Extinguishing Agents and Application Techniques," provides guidance on controlling fires involving combustible metals.

The Chemical Safety Vulnerability Working Group Report and Management Response Plan as well as other chemical safety references can be found at the DOE Chemical Safety Program Home Page at URL http://tis.eh.doe.gov:80/web/chem_safety/.

KEYWORDS: chemical reaction, lithium, pyrophoric

FUNCTIONAL AREA: Materials Handling/Storage

3. RADIOLOGICAL WORK PERMIT VIOLATION

On February 25, 1998, at the Fernald Environmental Management Project, Facilities Shutdown workers entered an open-top tank in violation of the radiological work permit. The radiological work permit stated that forced high efficiency particulate air-filtered ventilation was required for personnel entry into the tank; however, this ventilation was not provided. A confined space permit issued for this work also did not require forced ventilation. The Facilities Shutdown supervisor stopped work when workers complained of strong odors. After reviewing work permits requiring forced ventilation for worker entry into the tank, he sent all four workers involved to the site medical facility for evaluation. There was no impact to the health and safety of the workers, and there was no exposure to contamination. (ORPS Report OH-FN-FDF-FEMP-1998-0008)

Investigators determined that two workers entered the tank to remove material, while two others were stationed outside the tank. All four workers wore powered air-purifying respirators and other protective equipment as required by the radiological work permit and the confined space permit. Investigators also determined that the industrial hygiene technician who issued the confined space permit was in error for not requiring forced ventilation. Investigators determined that the workers signed the permit package before entry into the tank and should have known that forced air ventilation was required by the radiological work permit. The radiological engineer specified forced air ventilation in the radiological work permit because additional ventilation would minimize worker exposure if thorium became airborne as a result of worker activity inside the tank. Both the Facilities Shutdown supervisor and the workers stated that the radiological control technician did not discuss the requirement for forced air ventilation in the pre-job briefing. Corrective actions have not yet been developed.

NFS has reported violations of confined space entry requirements in several Weekly Summaries. Following are some examples.

- Weekly Summary 97-40 reported two events. At Brookhaven National Laboratory, two technicians worked in a cryogenic valve box without a safety watch and without satisfying all training requirements. At Oak Ridge National Laboratory, an inspector entered a confined space before a confined space entry permit had been reviewed or approved. (ORPS Reports CH-BH-BNL-BNL-1997-0030 and ORO--ORNL-X10PLEQUIP-1997-0010)
- Weekly Summary 97-11 reported that a subcontract worker at the Savannah River Site violated a confined space work permit by working in a confined space without continuous air monitoring or signing the permit. (ORPS Report SR--WSRC-RMAT-1997-0003)
- Weekly Summary 96-38 reported that a Sandia National Laboratory subcontractor entered a confined space without calibrated, inspected monitoring equipment; without an attendant; and without a posted confined space permit. (ORPS Report ALO-KO-SNL-CASITE-1996-0009)

OEAF engineers used the Graphical User Interface to search the entire ORPS database for occurrences with radiological work package violations and found 82 occurrences. Engineers searched all narrative fields using the search string "RWP<NEAR/5>violat*". In 49 percent of the occurrences where a direct cause was identified, the direct cause was procedure not used or used incorrectly. Thirty-eight percent of these occurrences resulted in personnel contamination.

The National Institute for Occupational Safety and Health reports that approximately 60 occupational fatalities per year in the United States are caused by improper confined space entries. OSHA reports that over 60 percent of confined space fatalities were would-be rescuers and estimates that 85 percent of deaths and injuries in confined spaces could be prevented if industry would fully implement sound confined space entry permit programs. Following are examples of elements that should be included in these programs.

- identifying and evaluating permit space hazards before entry
- establishing and implementing means to prevent unauthorized entry
- establishing and implementing means to eliminate or control hazards necessary for safe entry
- providing, maintaining, and requiring the use of personal protective equipment necessary for safe entry
- requiring testing of atmospheric conditions inside the space before entry
- ensuring that at least one attendant is stationed outside during entry
- coordinating with any contractors used
- implementing rescue procedures
- establishing a written permit system
- reviewing the permit system annually

Personnel responsible for issuing confined space entry permits should ensure that all aspects of good confined space practices are incorporated into the permitting process. A single person-in-charge should coordinate the permitting process to avoid problems resulting from conflicting work requirements. Requirements of all permits should be addressed at pre-job briefings. Supervisors should ensure that workers who enter confined spaces follow all permits required to perform work in confined spaces. OSHA requires training to ensure that employees involved in confined space work can perform their job functions safely. This training covers specific items for the authorized entrant, the attendant, and the entry supervisor. Training should emphasize that even in confined spaces that are free of hazardous materials there may be heavier-than-air gasses. These

gasses, typically found at industrial facilities, may displace air in low-lying areas and present an asphyxiation hazard.

Facility managers should consult the following documents when reviewing their confined space programs.

- OSHA Standard 29 CFR 1910.146, *Permit-Required Confined Spaces*, contains requirements for practices and procedures to protect employees from the hazards of confined space entry. This standard is available at URL <http://www.osha-slc.gov/>.
- DOE/EH-035P, *OSH Technical Reference Manual*, chapter 4, "Confined Space Entry," provides a checklist for employees and supervisors to follow. This document is available at URL <http://tis.eh.doe.gov:80/docs/osh/otr>.

KEYWORDS: confined space, radiological work permit

FUNCTIONAL AREAS: Industrial Safety, Training and Qualification

4. FURNACE DOOR FALLS DURING DECOMMISSIONING ACTIVITIES

On February 25, 1998, at the Rocky Flats Environmental Technology Plutonium Processing and Handling Facility, a glovebox furnace door fell 4 to 6 feet while decontamination and decommissioning workers were removing a glovebox and its contents. Workers had removed the furnace door bolts to dispose of the 100-pound door. However, a vertical track continued to hold the door in place (raised), so the workers thought it was secure and used a "nibbler" (a metal cutting tool) to remove other items within the glovebox. Investigators believe that vibration from the nibbler caused the furnace door to loosen from the track and fall. Although no one was injured as a result of this event, failure to replace the furnace door bolts or completely remove the door created a personnel safety hazard. (ORPS Report RFO--KHLL-779OPS-1998-0004)

The facility manager held a fact-finding meeting. Meeting attendees learned that the work was performed to an approved work plan that allowed the workers to remove items in any order. The workers' supervisor stated that they should have re-installed the bolts or completed the door removal before continuing work to ensure the door could not become dislodged. The facility manager discussed securing loads properly, removing loose items from work areas, and ensuring personnel safety with the meeting attendees. He also directed facility personnel to further investigate this event and implement hazard controls for the remainder of the work.

NFS has reported worker injuries from falling material in several Weekly Summaries. Following is an example, as well as related events reported to the Computerized Accident and Incident Reporting System and ORPS.

- On April 22, 1997, at the Stanford Linear Accelerator Center, a machine operator received a laceration on his mouth when a core-drill compressor pump fell and struck him. Investigators reported that the core drill compressor was not properly secured before the operator began work. (CAIRS Report 1997011)

- Weekly Summary 96-51 reported that a construction worker at the Pantex Plant was injured when a 250-pound steel plate knocked him from a step ladder and he fell 4 feet to the floor. Two construction workers were lifting the plate with a hand-operated chain hoist. At 9 feet above the floor, the chain disengaged from the plate lifting device, and the plate dropped. The chain was not properly rigged, and it came loose when the worker shook the load to clear an obstruction. (ORPS Report ALO-AO-MHSM-PANTEX-1996-0239)
- On May 17, 1995, at the Los Alamos National Laboratory, a worker received a laceration on his forehead when a 20-foot section of pipe fell 15 feet onto his hard hat, rebounded off the ground, and hit him on the forehead. The pipe was being lowered to the ground when it slipped out of the J-hook and past the safety latch. (ORPS Report ALO-LA-LANL-PHYSTECH-1995-0005)
- On May 19, 1992, at the Pantex Plant, an installer was performing work on a fire door when the door release-lever parts dropped, allowing an adjusting well to rotate 315 degrees and crush his hands. Investigators determined that the root cause was failure to use safety wires during tension and latch setting operations. (ORPS Report ALO-AO-MHSM-PANTEX-1992-0033)

The Statistical Abstract of the United States-1996, published by the U. S. Department of Commerce, states that based on the 1994 *Census of Fatal Occupational Injuries*, 371 fatalities occurred when workers were struck by falling objects. This represented 6 percent of all work-related fatalities in 1994.

This event underscores the importance of using effective work control practices and job planning and the need to be alert to potential hazards. A safety and health hazard analysis must be included in the work control process to help prevent injuries.

Managers and supervisors in charge of job performance should ensure that hazards associated with decontamination and decommissioning are identified and included in the appropriate procedure steps and precautionary statements. DOE facility managers should ensure that personnel understand the basics of work control practices and safety and health hazard analyses.

- DOE 0 440.1, *Worker Protection Management for DOE Federal and Contractor Employees*, states that the contractor must identify workplace hazards and evaluate the risk of associated worker injury or illness.
- Chapter 12 of DOE/EM-0142P, *Decommissioning Handbook*, March 1994, DOE Office of Environmental Restoration, provides requirements for worker protection during decontamination and decommissioning activities. It states that worker protection is an important element of any project. The handbook divides worker protection issues into three categories: (1) protection from radiation; (2) protection from toxic and hazardous materials; and (3) protection from traditional industrial safety hazards. The handbook further states that DOE decommissioning activities may combine hazards not commonly encountered elsewhere (such as industrial safety hazards and radiological hazards) and lists OSHA regulations that apply to decommissioning, as well as key elements of a health and safety program. Section 12 of the handbook states that extra precautions are required for worker safety because hazards in the facility may be unknown and many activities are infrequently performed.

KEYWORDS: safety hazard, personnel safety, equipment

FUNCTIONAL AREAS: Industrial Safety, Hazards and Barrier Analysis, Training and Qualification

5. OPERATOR ERROR RESULTS IN A NEAR-MISS

On February 24, 1998, at the Strategic Petroleum Reserves Weeks Island Site, a mobile crane operator was nearly hit by a crane jib extension when it swung free of the cradle and struck the crane cab. The jib broke the window and windshield, damaged the cab structure, and stopped approximately 6 inches from the operator's head. Investigators determined that the operator failed to release tension on a cable when he raised the crane boom, causing the jib extension to pull free from its cradle. The operator immediately shut down the crane, exited the cab, and notified the control room and site management. Personnel from the contracting organization returned the mobile crane to a safe configuration and removed it from the site for repairs. Failure to follow the equipment manufacturer's procedure resulted in crane damage and could have caused a severe personnel injury or a fatality. (ORPS Report HQ--SPR-WI-1998-0001)

Investigators determined that the contractor was preparing lift equipment to remove some small-diameter piping from a crude-oil metering skid for system decommissioning. Investigators reported that initially the jib extension was properly stowed on the underside of the boom in the cradle hooks. Investigators determined that the operator followed the procedure for preparing the jib for installation, properly set the outriggers, lowered and retracted the boom, and removed and secured the retaining pins. However, as the operator raised the boom, he forgot to slacken the hoist cable as indicated in an operating manual note. Investigators determined that when the operator raised the boom to a vertical position, the jib slipped off the retaining cradle and fell downward into the cab. Figure 5-1 shows the jib entry point into the crane cab. The crane boom and jib extension configuration are shown in figure 5-2.



Figure 5-1. Jib Extension Entry Point

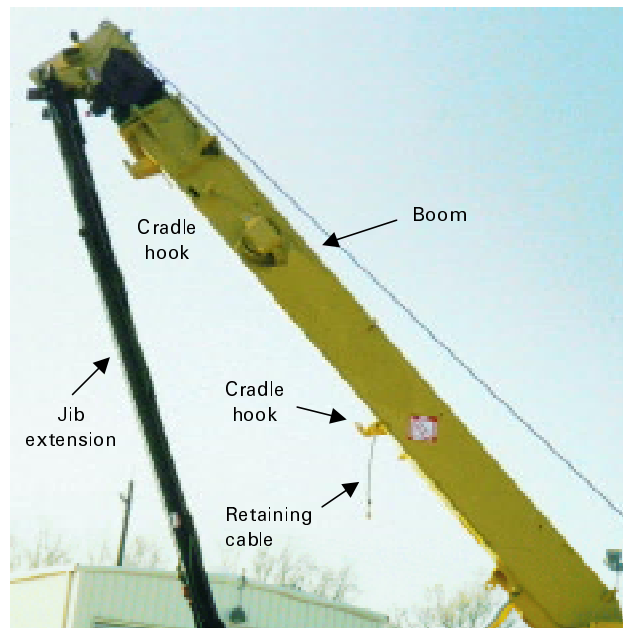


Figure 5-2. Crane Boom and Jib Configuration

The facility manager directed site and contractor personnel to investigate the accident. Accident investigators determined that the cause of this event was personnel error (inattention to detail). They continue to investigate to ascertain event details. The facility manager directed the crane operator to attend operator refresher training.

NFS has reported crane operator errors in several Weekly Summaries. Following are some examples, as well as a related event reported to ORPS.

- Weekly Summary 97-28 reported that, at Hanford, rigging suspended from a crane contacted an energized 13.8-kV electrical distribution line at a construction site, causing a phase-to-ground fault and loss of power to several facilities. Investigators reported that the crane operator and an oiler were preparing the crane for operation and that the boom had been left positioned above the 13.8-kV line at the end of the previous day. While looking into the rising sun, the operator attempted to lower the rigging to his line of sight for inspection. As he did so, a 12-foot choker cable attached to the rigging contacted the 13.8-kV line, causing the fault. (ORPS Report RL--PHMC-KBASINS-1997-0013)
- Weekly Summary 97-23 reported that, at the Hanford Tank Farms, a 30-ton mobile, hydraulic crane used to lift a 4,600-pound steel trench box tipped, and the boom landed on a 10-foot mound of dirt. The crane came to rest against the mound at a 45-degree angle. The crane operator and an assisting flagman were not injured. Investigators determined that the crane operator failed to extend all four outriggers as required for this type of lift. (RL--PHMC-TANKFARM-1997-0048)
- On July 24, 1997, at the Hanford Site, a private driver sustained car damage when he ran over an outrigger pad after a crane operator failed to remove and stow the outrigger pads before driving the crane to a new location. Investigators determined that a flip-lock pin failed and allowed the pad to disengage and fall onto the roadway. (ORPS Report RL--PHMC-FSS-1997-0020)

The DOE Office of Oversight published, "Independent Oversight Special Study of Hoisting and Rigging Incidents Within the Department of Energy," in October 1996. This study indicated that 74 percent of crane incidents from October 1, 1993, to March 31, 1996, resulted in accidents that either damaged equipment, injured personnel, or both. It also determined that personnel error was identified as the principal cause of DOE hoisting and rigging incidents, accounting for 68 percent of the incidents. The study further determined that inattention to detail and not following procedures accounted for 84 percent of the personnel errors. The study pointed out that training-related deficiencies were not identified as a significant problem and accounted for only 3 percent of crane incidents. The study concluded that a strong relationship exists between the incident root causes and the type of equipment used and recommended that management formulate equipment-specific corrective actions to improve safety performance. In addition, the study stated that because of DOE transitions from production-oriented operations to environmental restoration, a greater use of subcontractor-operated mobile cranes is expected. The report recommends that these operations be closely evaluated and monitored to prevent hoisting and rigging incidents.

These events illustrate the hazards caused by operator errors. Crane operators must pay attention to detail while operating cranes and must be qualified and knowledgeable about proper crane operation. They must also ensure that all safety requirements are met and should request assistance from the appropriate manager when an operation appears to be unsafe. Information that is contained in procedure notes or precautionary statements should be in a format to ensure that safe operation of equipment is not impacted. Operator aids can be posted in prominent locations to remind to users of information that might otherwise be overlooked.

- DOE-STD-1090-96, Revision 1, *Hoisting and Rigging*, chapter 9, specifies operation, inspection, maintenance, and testing requirements for mobile cranes. A sample checklist is included in chapter 9. Use of this checklist will help operators and supervisors ensure that mobile crane lifts are safe and performed without incident. The standard states that the supervisor is responsible for ensuring that equipment is operated safely, for assigning a designated leader for each lift, and for designating a person-in-charge for critical lifts. Section 9.5.1 states that the operator must not engage in any practices that will divert the operator's attention while operating the crane. The operator is responsible for safe operation of the equipment and should not operate equipment with a known safety problem. Personnel involved in crane operations should review their responsibilities as detailed in the standard.

The "Independent Oversight Special Study of Hoisting and Rigging the Department of Energy," can be found at URL http://nattie.eh.doe.gov/web/eh2/reviews/hoist_rig.html.

KEYWORDS: near miss, crane

FUNCTIONAL AREAS: Industrial Safety, Hoisting and Rigging

FOLLOW UP ACTIVITY

1. UPDATE ON EXCESSIVE HYDROGEN LEVELS AT ROCKY FLATS

Weekly Summary 98-07, Article 5, reported that laboratory personnel at the Rocky Flats Environmental Technology Plutonium Processing and Handling Facility analyzed a suspect sample and reported it contained nitrous oxide with 22 percent free hydrogen. Workers obtained the sample when they drained a non-radioactive oxalic acid line. On February 27, 1998, the facility manager upgraded the event to reflect the declaration of a positive unreviewed safety question. (ORPS Update Report RFO--KHLL-771OPS-1998-0006)

Investigators determined that facility hydrogen controls were applied only to tanks in radioactive systems. They also determined that facility personnel did not consider hydrogen generation from chemical interactions before draining the oxalic acid line. The facility manager directed facility personnel to enhance existing facility hydrogen controls and to include controls for process lines and non-radioactive systems.

Personnel interested in additional chemical safety information should review DOE/EH-0398P, "Chemical Safety Vulnerability Working Group Report," dated December 21, 1994. This report identifies the following generic chemical vulnerabilities at DOE facilities.

- chemical characterizations
- unanalyzed hazards

- past chemical spills
- planning for the disposition of chemicals
- chemical storage practices
- condition of facilities and safety systems
- abandoned and residual chemicals
- inventory control and tracking

The working group report also includes information that can aid personnel responsible for chemical cleanup. As more and more DOE facilities transition to decontamination and decommissioning activities, additional chemical cleanup challenges will be identified. Review of this study can help personnel in charge of decontamination and decommissioning activities identify potential chemical hazards and weaknesses.

The Secretary of Energy issued "DOE Response to the May 14, 1997 Explosion at Hanford's Plutonium Reclamation Facility" on August 4, 1997. This memorandum states: "DOE field offices must reassess known vulnerabilities (chemical and radiological) at facilities that have been shutdown, are in standby, are being deactivated, or have otherwise changed their conventional mode of operation in the last several years." It also states: "DOE and contractor field organizations must assess the technical competence of their staffs to recognize the full range of hazards presented by the materials in their facilities, act on results, and implement training programs where needed."

The Secretary of Energy also issued "Assessment of Hazards Associated with Chemical and Radioactive Waste Storage Tanks and Ancillary Equipment" on October 31, 1997. This memorandum states that DOE offices should ensure that all waste storage tanks are identified, fully characterized, and addressed. It also discusses the need for site personnel to understand all possible chemical reactions in tanks and in ancillary equipment. Article 2 in this week's issue includes additional chemical safety references.

KEYWORDS: chemical vulnerabilities, unreviewed safety question

FUNCTIONAL AREAS: Chemical, Licensing/Compliance